

ABSTRACT

Methods, systems and apparatus for photo-processing of fluids,
5 particularly complex fluids, such as blood products, pharmaceuticals, injectables and
vaccines, are provided. The disclosed methods and systems employ non-laser light
source(s) to generate monochromatic light energy, preferably in the range of 260 nm to
310 nm, for fluid treatment. Advantageous processing regimens and/or adjunct additives
and/or agents may also be used to achieve desired and/or enhanced results, e.g.,
10 inactivation of pathogens, bacteria and/or viruses, modulation of immune response,
and/or leukoreduction. Particularly preferred embodiments include novel temperature
control systems and geometric/structural arrangements that provide enhanced processing
results and/or efficiencies. The disclosed methods, systems and apparatus achieve
desirable results in a broad range of diagnostic, therapeutic and treatment applications,
15 and generally provide enhanced operating efficiencies and/or processing results in
application modalities that employ a broad range of photo-activated and/or photo-
responsive materials and/or compounds.